

**Amendments to the Specification:**

Please replace the first paragraph on page 1, after the Title, with the following amended paragraph:

This application is a continuation application of U.S. Application No. 10/061,128, filed on January 30, 2002, which is a continuation application of U.S. patent application number 09/257,130, filed on February 25, 1999, now U.S. Patent No. 6,348,587, which claims priority to U.S. provisional application numbers 60/075,893, filed on February 25, 1998, and U.S. provisional application number 60/080,569, filed on April 3, 1998. The invention described herein was made with Government support under grant number AI32351 awarded by the National Institutes of Health. The United States Government has certain rights to this invention.

Please replace the paragraph starting at page 78, line 2, with the following amended paragraph:

Melting points were determined on a Mel-temp II laboratory device and are uncorrected. Nuclear magnetic resonance spectra were recorded on a Bruker 250 and AMX400 400 MHz spectrometers with tetramethylsilane as the internal reference; chemical shifts ( $\delta$ ) are reported in parts per million (ppm), and the signals are described as s (singlet), d (doublet), t (triplet), q (quartet), br s (broad singlet), dd (doublet of doublet), and m (multiplet). UV spectra were obtained on a ~~beekman~~ Beckman DU 650 spectrophotometer. Optical rotations were measured on a Jasco DIP-370 Digital Polarimeter. Mass spectra were measured on a Micromass Inc. Autospec High Resolution double focussing sector (EBE) MS spectrometers. Infrared spectra were recorded on a Nicolet 510 FT-IR spectrometer. Elemental analyses were performed by Atlantic Microlab, Inc., Norcross, GA. All reactions were monitored using thin layer chromatography on Analtech, 200 mm silica gel GF plates. Dry 1,2-dichloroethane, dichloromethane, and acetonitrile were obtained by distillation from CaH<sub>2</sub> prior to use. Dry THF was obtained by distillation from Na and benzophenone when the solution became purple.

Please replace the paragraph starting at page 78, line 15, with the following amended paragraph:

**L-(S)-Glyceraldehyde acetonide (302).** A solution of ~~L-gulonic- $\gamma$ -lactone~~ L-gulonic- $\gamma$ -lactone (175 g, 0.98 mol) in DMF (1 L) was cooled to ~~0-5~~ 0 °C and *p*-toluenesulfonic acid (1.1 g, 5.65 mmol) was added portionwise with stirring. To the resulting solution, 2-methoxypropene (87.7 g, 0.92 mol) was added dropwise through a dropping funnel at ~~0-5~~ 0 °C. The reaction mixture was warmed up to room temperature and further stirred for 24 h. After the completion of the reaction, sodium carbonate (124 g) was added and the resulting suspension was vigorously stirred for 3 hours. It is then filtered over glass filter and the filtrate is evaporated under vacuum. To the yellow residue, toluene (170 mL) is added whereupon crystallization occurred. The solid was filtered by suction, washed with hexanes/ethanol (9:1; 1 L), and dried to give yellowish solid **301** (99.1 g, 65 %).

Please replace the paragraph starting at page 79, line 3, with the following amended paragraph:

To a stirred suspension of 5,6-*O*-isopropylidene-L-gulono-1,4-lactone (70.0 g, 0.32 mol) in water (270 mL), sodium metaperiodate (123 g, 0.58 mol) was added portionwise at ~~0-5~~ 0 °C over 30 min maintaining pH 5.5 (adjusted by addition of 2 N NaOH). The suspension was stirred at room temperature for 2 hours, then saturated with sodium chloride and filtered. The pH of the filtrate was adjusted to 6.5-7.0 and extracted with dichloromethane (5 times 200 mL) and ethyl acetate (5 times 300 mL). The combined organic layer were dried with anhydrous magnesium sulfate, filtered and concentrated under reduced pressure (~~<20-5~~) (< 20 °C). And then the resulting residue was distilled to give **302** (23.2 g, 69 %) as a colorless oil; b.p. 49-51 ~~5-10~~ °C / 16 Torr. ~~[ $\alpha$ ]<sub>D</sub><sup>25</sup> -66.4 (c 6.3, benzene).~~

Please replace the paragraph starting at page 79, line 12, with the following amended paragraph:

**(E)/(Z)-Ethyl-3-[(R)-2,2-dimethyl-1,3-dioxolan-4-yl]-2-fluoroacrylate (E-303 and Z-303).** A solution of triethyl 2-fluorophosphonoacetate (39.2 g, 162 mmol) in THF (70 mL) was cooled to  $-78 \pm 2^\circ\text{C}$  and a solution of sodium bis(trimethylsilyl)amide (1.0 M solution in THF, 162 mL, 162 mmol) was added dropwise. The mixture was kept for 30 min at  $-78 \pm 2^\circ\text{C}$ , then a solution of **303** (19.14 g, 147 mmol) in THF (70 mL) was added. After being stirred for 1 h at  $-78 \pm 2^\circ\text{C}$ , the reaction mixture was treated with aqueous  $\text{NH}_4\text{Cl}$  and extracted with ether. The ether phase was washed with saturated NaCl, dried over  $\text{MgSO}_4$ , filtered and evaporated. The residue was chromatographed on silica gel to give **E-303** and **Z-303** (9:1 by  $^1\text{H}$  NMR) as a pale yellowish oil (34.6 g, 97.9 %).  $^1\text{H}$  NMR ( $\text{CDCl}_3$ )  $\delta$  1.34, 1.36 (2t,  $J = 8$  Hz,  $-\text{CH}_2\text{CH}_3$ ), 1.40, 1.45 (2s,  $-\text{CH}_3$ ), 3.69 (m,  $\text{H}_a$ -5), 4.28 (m,  $\text{H}_b$ -5,  $-\text{CH}_2\text{CH}_3$ ), 5.02 (m, H-4), 5.40 (m, H-4), 6.02 (dd,  $J = 8, 20$  Hz, H-3), 6.18 (dd,  $J = 8, 32$  Hz, H-3).

Please replace the paragraph starting at page 80, line 1, with the following amended paragraph:

**(R)-(+)-4-[(tert-Butyldimethylsilyloxy)methyl]-2-fluoro-2-buten-4-olide (307).** A solution of **E-303** and **Z-303** (19.62 g, 89.89 mmol) in 110 mL of anhydrous EtOH was treated with 30 mL of conc. HCl and stirred at room temperature for 2 hr. The solvent was removed in vacuo and the residue was coevaporated with Toluene (3\*300 mL) to give the lactone **304** and uncyclized ester **305**. The resulting yellowish syrup was used for next reaction without further purification. *t*-Butyldimethylsilyl chloride (27.1 g, 180 mmol) was added to a mixture of **304**, **305** and imidazole (12.3 g, 180 mmol) in  $\text{CH}_2\text{Cl}_2$  (250 mL) and the reaction mixture was stirred for 4 h at room temperature. The resulting mixture was washed with water, dried ( $\text{MgSO}_4$ ), filtered and concentrated to dryness. The residue was isolated by silica gel column chromatography using 4% EtOAc-hexanes as an eluent to give **307** (28.0g, 70.2% from compound **302**) as a white

crystalline solid. mp 48-50 °C;  $[\alpha]_D^{28} +105.3$  (c 1.60, CHCl<sub>3</sub>); <sup>1</sup>H NMR (CDCl<sub>3</sub>)  $\delta$  0.07, 0.08 (2s, 2 x CH<sub>3</sub>), 0.88 (s, <sup>t</sup>Bu), 3.88 (m, 2H, H-5), 5.01 (m, 1H, H-4), 6.73 (ps t, 1H, J = 4 Hz); Anal. Calcd for C<sub>10</sub>H<sub>19</sub>FO<sub>3</sub>Si: C, 53.63; H, 7.77. Found: C, 53.70; H, 7.75.

Please replace the paragraph starting at page 80, line 14, with the following amended paragraph:

**1-Acetyl-4-[(*tert*-butyldimethylsilyloxy)methyl]-2-fluoro-2-buten-4-olide (309).** Lactone **307** (20.58 g, 83.54 mmol) was dissolved in 200 mL of CH<sub>2</sub>Cl<sub>2</sub> under nitrogen atmosphere, then the mixture was cooled to -78 °C and 1.0 M solution of DIBAL-H in CH<sub>2</sub>Cl<sub>2</sub> (125 mL) was added. The resulting mixture was stirred for 2 hours at -78 °C. The cold mixture was treated with dilute nitric acid, washed with water, and dried (Na<sub>2</sub>SO<sub>4</sub>). Evaporation of the solvent gave anomers of **308** as a pale yellow oil (16.6 g, crude yield 80 %), which was used for the next step without further purification.

Please replace the paragraph starting at page 80, line 21, with the following amended paragraph:

Ac<sub>2</sub>O (25 mL, 0.27 mol) was added to a solution of **308** and pyridine (22 mL, 0.27 mol) in CH<sub>2</sub>Cl<sub>2</sub> (200 mL) at 0 °C and the resulting mixture was stirred for 16 hours. The reaction mixture was washed with dilute HCl, saturated NaHCO<sub>3</sub> solution, and brine. The combined organic layer was dried, filtered, and concentrated to dryness. The residue was column chromatographed (6.5 % EtOAc/hexanes) to give **309** (12.6 g, 65 %) as a colorless oil.

Please replace the paragraph starting at page 81, line 4, with the following amended paragraph:

A mixture of uracil (420 mg, 3.75 mmol), hexamethyldisilazane (15 mL) and ammonium sulfate (20 mg) was refluxed for 3 hours under nitrogen. The clear solution obtained was concentrated to dryness *in vacuo*. TMSOTf (0.7 mL, 3.14 mmol) were added to the solution of sugar **309** (728 mg, 2.50 mmol) and the silylated base in dry DCE (20 mL) at 0  $\pm$   $^{\circ}\text{C}$ . The reaction mixture was stirred for 2 hours under nitrogen, poured into a cooled sat.  $\text{NaHCO}_3$  solution (30 mL) and stirred for 15 min. The resulting mixture was washed, dried ( $\text{Na}_2\text{SO}_4$ ), filtered, and concentrated *in vacuo*. The crude product was purified by column chromatography (3 % MeOH/ $\text{CHCl}_3$ ) to give **310** (0.960 g, 2.73 mmol, 73 %) as an inseparable anomeric mixture, which was used in the next step without separation.

Please replace the paragraph starting at page 81, line 15, with the following amended paragraph:

UV ( $\text{CHCl}_3$ )  $\epsilon_{\text{max}}$   $\lambda_{\text{max}}$  257.5 nm.; Anal. ( $\text{C}_{15}\text{H}_{23}\text{FN}_2\text{O}_4\text{Si}$ ) C, H, N.

Please replace the paragraph starting at page 81, line 18, with the following amended paragraph:

Silylated thymine (242 mg, 1.92 mmol), **307** (500 mg, 1.72 mmol), and TMSOTf (0.5 mL, 2.25 mmol) were reacted for 2 h to give a mixture of **311**, which was purified by silica gel column chromatography (3 % MeOH/ $\text{CHCl}_3$ ) as an inseparable anomeric mixture (0.392 g, 1.10 mmol, 64 %). UV ( $\text{CHCl}_3$ )  $\epsilon_{\text{max}}$   $\lambda_{\text{max}}$  262.0 nm. Anal. ( $\text{C}_{16}\text{H}_{25}\text{FN}_2\text{O}_4\text{Si}$ ) C, H, N.

Please replace the paragraph starting at page 82, line 1, with the following amended paragraph:

Silylated *N*<sup>6</sup>-benzoyl cytosine (790 mg, 3.67 mmol), **307** (470 mg, 1.62 mmol), and TMSOTf (0.5 mL, 2.25 mmol) were reacted for 2 h to give mixtures of **312** and **313**, which were purified by silica gel column (30 % EtOAc/hexane) to afford  $\beta$  anomer **312** (0.34 g, 0.76 mmol, 47.1 %) as a white solid and  $\alpha$  anomer **313** chromatography (0.23 g, 0.52 mmol, 31.8 %) as a white solid. **312**: UV (CHCl<sub>3</sub>)  $\epsilon_{\text{max}}$   $\lambda_{\text{max}}$  260.5 nm; Anal. (C<sub>22</sub>H<sub>28</sub>FN<sub>3</sub>O<sub>4</sub>Si) C, H, N.; **313**: UV (CHCl<sub>3</sub>)  $\epsilon_{\text{max}}$   $\lambda_{\text{max}}$  260.5 nm.; Anal. (C<sub>22</sub>H<sub>28</sub>FN<sub>3</sub>O<sub>4</sub>Si) C, H, N.

Please replace the paragraph starting at page 82, line 10, with the following amended paragraph:

Silylated 5-fluoro-cytosine (300 mg, 2.32 mmol), **309** (360 mg, 1.24 mmol), and TMSOTf (0.4 mL, 1.86 mmol) were reacted for 2 h to give a mixture of **314** and **315**, which was purified by silica gel column chromatography (3 % MeOH/CH<sub>2</sub>Cl<sub>2</sub>) to afford  $\beta$  anomer **314** as a white solid (168 mg, 37.8 %) and  $\alpha$  anomer **315** (121 mg, 27.1 %) as a white solid. **314**: UV (MeOH)  $\epsilon_{\text{max}}$   $\lambda_{\text{max}}$  281.5 nm; **315**: UV (MeOH)  $\epsilon_{\text{max}}$   $\lambda_{\text{max}}$  281.5 nm.

Please replace the paragraph starting at page 82, line 15, with the following amended paragraph:

**1-(2,3-Dideoxy-2-fluoro-( $\alpha,\beta$ -L-gycero-pent-2-eno-furanosyl)uracil**

**1-(2,3-Dideoxy-2-fluoro-( $\alpha,\beta$ )-L-gycero-pent-2-eno-furanosyl)uracil** (**316** and **317**).

Tetra-*n*-butylammonium fluoride (0.6 mL, 0.6 mmol) was added to a mixture of **310** (177 mg, 0.52 mmol) in THF (15 mL) and the reaction mixture was stirred at room temperature for 15 min. The solvent was removed and the residue was purified by silica gel column

chromatography (2 % MeOH/CHCl<sub>3</sub>) to give  $\beta$ -anomer **316** (52.8 mg, 0.23 mmol, 44.5 %) and  $\alpha$ -anomer **317** (35.1 mg, 0.15 mmol, 29.6 %).

Please replace the paragraph starting at page 82, line 21, with the following amended paragraph:

**316:** UV (H<sub>2</sub>O)  $\epsilon_{\max}$   $\lambda_{\max}$  261.0 nm (pH 7); Anal. (C<sub>9</sub>H<sub>9</sub>FN<sub>2</sub>O<sub>4</sub>·0.3H<sub>2</sub>O) C, H, N. **317:** UV (H<sub>2</sub>O)  $\epsilon_{\max}$   $\lambda_{\max}$  261.0 nm (pH 7); Anal. (C<sub>9</sub>H<sub>9</sub>FN<sub>2</sub>O<sub>4</sub>·0.2H<sub>2</sub>O) C, H, N.

Please replace the paragraph starting at page 82, line 23, with the following amended paragraph:

~~1-(2,3-Dideoxy-2-fluoro-( $\alpha,\beta$ -L-glycero-pent-2-eno-furanosyl)thymine~~  
1-(2,3-Dideoxy-2-fluoro-( $\alpha,\beta$ -L-glycero-pent-2-eno-furanosyl)thymine (**318** and **319**).  
Tetra-*n*-butylammonium fluoride (0.8 mL, 0.8 mmol) was added to a mixture of **311** (240 mg, 0.67 mmol) in THF (10 mL) at 0 °C and the reaction mixture was stirred at room temperature at rt for 15 min. The solvent was removed and the residue was purified by silica gel column chromatography (40 % THF/cyclohexane) to give  $\beta$ -anomer **318** (66.5 mg, 0.28 mmol, 41 %) and  $\alpha$ -anomer **319** (52.8 mg, 0.23 mmol, 26 %).

Please replace the paragraph starting at page 83, line 4, with the following amended paragraph:

**318:** UV (H<sub>2</sub>O)  $\epsilon_{\max}$   $\lambda_{\max}$  265.5 nm (pH 7); Anal. (C<sub>10</sub>H<sub>11</sub>FN<sub>2</sub>O<sub>4</sub>·0.4H<sub>2</sub>O) C, H, N. **319:** UV (H<sub>2</sub>O)  $\epsilon_{\max}$   $\lambda_{\max}$  266.0 nm (pH 7); Anal. (C<sub>9</sub>H<sub>9</sub>FN<sub>2</sub>O<sub>4</sub>·0.3H<sub>2</sub>O) C, H, N.

Please replace the paragraph starting at page 83, line 6, with the following amended paragraph:

~~*N*<sup>6</sup>-Benzoyl-1-(2,3-dideoxy-2-fluoro- $\beta$ -L-gycero-pent-2-enofuranosyl)cytosine (320).~~

*N*<sup>6</sup>-Benzoyl-1-(2,3-dideoxy-2-fluoro- $\beta$ -L-gycero-pent-2-enofuranosyl)cytosine (320).

Tetra-*n*-butylammonium fluoride (1M in THF) (1 mL, 1 mmol) was added to a solution of the  ~~$\beta$  anomer~~  $\beta$  anomer **312** (280 mg, 0.63 mmol) in THF (10 mL) and the reaction was allowed to stir at room temperature for 1h. The reaction mixture was concentrated under the reduced pressure and the residue was purified by flash silica gel column using 2.5 % MeOH/CHCl<sub>3</sub> to give **320** (218 mg, 0.66 mmol, 75 %) as a white solid.

Please replace the paragraph starting at page 83, line 12, with the following amended paragraph:

UV (MeOH)  $\epsilon_{\max}$   $\lambda_{\max}$  260.5 nm. Anal. (C<sub>16</sub>H<sub>14</sub>FN<sub>3</sub>O<sub>4</sub>) C, H, N.

Please replace the paragraph starting at page 83, line 13, with the following amended paragraph:

~~*N*<sup>6</sup>-Benzoyl-1-(2,3-dideoxy-2-fluoro- $\beta$ -L-gycero-pent-2-enofuranosyl)cytosine (321).~~

*N*<sup>6</sup>-Benzoyl-1-(2,3-dideoxy-2-fluoro- $\alpha$ -L-gycero-pent-2-enofuranosyl)cytosine (321).

Tetra-*n*-butylammonium fluoride (1M in THF) (1 mL, 1 mmol) was added to a solution of the  ~~$\beta$  anomer~~  $\alpha$  anomer **313** (280 mg, 0.63 mmol) in THF (10 mL) and the reaction was allowed to stir at room temperature for 1h. The reaction mixture was concentrated under the reduced pressure and the residue was purified by silica gel column chromatography using 2.5 % MeOH/CHCl<sub>3</sub> to give **321** (145.8 mg, 0.44 mmol, 69 %) as a white solid.



Please replace the paragraph starting at page 83, line 19, with the following amended paragraph:

UV (MeOH)  $\epsilon_{\text{max}}$   $\lambda_{\text{max}}$  260.5 nm. Anal. (C<sub>16</sub>H<sub>14</sub>FN<sub>3</sub>O<sub>4</sub> .0.3H<sub>2</sub>O) C, H, N.

Please replace the paragraph starting at page 83, line 20, with the following amended paragraph:

~~1-(2,3-dideoxy-2-fluoro- $\alpha$ -L-glycero-pent-2-enofuranosyl)cytosine (322).~~

1-(2,3-dideoxy-2-fluoro- $\beta$ -L-glycero-pent-2-enofuranosyl)cytosine (322). A solution of the  $\alpha$  anomer-  $\beta$  anomer (67.60 mg, 0.204 mmol) in MeOH (5 mL) was treated with NH<sub>3</sub>/MeOH (10 mL saturated solution) and the reaction mixture was allowed to stir at room temperature until the disappearance of starting material was observed (10 h). The reaction mixture was concentrated under reduced pressure and the residue was purified by preparative TLC using 12 % MeOH/CH<sub>2</sub>Cl<sub>2</sub> as an eluent. The material obtained from the plate gave **322** (43 mg, 93.1 %) as a solid on trituration with hexanes and diethylether.

Please replace the paragraph starting at page 84, line 4, with the following amended paragraph:

UV (H<sub>2</sub>O)  $\epsilon_{\text{max}}$   $\lambda_{\text{max}}$  266.5 nm (pH 7); Anal. (C<sub>9</sub>H<sub>10</sub>FN<sub>3</sub>O<sub>3</sub> .0.4H<sub>2</sub>O) C, H, N.

Please replace the paragraph starting at page 84, line 5, with the following amended paragraph:

~~1-(2,3-dideoxy-2-fluoro- $\alpha$ -L-glycero-pent-2-enofuranosyl)cytosine.~~

1-(2,3-dideoxy-2-fluoro- $\alpha$ -L-glycero-pent-2-enofuranosyl)cytosine (323). A solution of the  $\alpha$  anomer-  $\alpha$  anomer (65.90 mg, 0.199 mmol) in MeOH (5 mL) was treated with NH<sub>3</sub>/MeOH (10 mL saturated solution) and the reaction mixture was allowed to stir at room temperature until the disappearance of starting material was observed (16 h). The reaction mixture was concentrated under reduced pressure and the residue was purified by preparative TLC using 12 % MeOH/CH<sub>2</sub>Cl<sub>2</sub> as an eluent. The material obtained from the plate gave 322 (42.5 mg, 94.5 %) as a solid on trituration with hexanes and diethylether.

Please replace the paragraph starting at page 84, line 12, with the following amended paragraph:

UV (H<sub>2</sub>O)  $\epsilon_{\max}$   $\lambda_{\max}$  276.0 nm (pH 2), 267.0 nm(pH 7); Anal. (C<sub>9</sub>H<sub>10</sub>FN<sub>3</sub>O<sub>3</sub>) C, H, N.

Please replace the paragraph starting at page 84, line 13, with the following amended paragraph:

~~5-Fluoro-1-(2,3-dideoxy-2-fluoro- $\alpha$ -L-glycero-pent-2-enofuranosyl)cytosine~~

5-Fluoro-1-(2,3-dideoxy-2-fluoro- $\beta$ -L-glycero-pent-2-enofuranosyl)cytosine (324).

Please replace the paragraph starting at page 84, line 14, with the following amended paragraph:

Tetra-*n*-butylammonium fluoride (1M in THF) was added to a solution of the  $\square$ -~~anomer~~  $\beta$  anomer **314** in acetonitrile and the reaction was allowed to stir at room temperature for 1h. The reaction mixture was concentrated under the reduced pressure and the residue was purified by flash silica gel column using 12 % MeOH/CHCl<sub>3</sub> to give **324**.

Please replace the paragraph starting at page 84, line 19, with the following amended paragraph:

~~5-Fluoro-1-(2,3-dideoxy-2-fluoro- $\square$ -L-gycero-pent-2-enofuranosyl)cytosine~~  
5-Fluoro-1-(2,3-dideoxy-2-fluoro- $\alpha$ -L-gycero-pent-2-enofuranosyl)cytosine (325).

Please replace the paragraph starting at page 84, line 20, with the following amended paragraph:

Tetra-*n*-butylammonium fluoride (1M in THF) was added to a solution of the  $\square$ -~~anomer~~  $\beta$  anomer **315** in acetonitrile and the reaction was allowed to stir at room temperature for 1h. The reaction mixture was concentrated under the reduced pressure and the residue was purified by flash silica gel column using 12 % MeOH/CHCl<sub>3</sub> to give **325**.

Please replace the paragraph starting at page 85, line 14, with the following amended paragraph:

**326:** UV (MeOH)  $\square_{\max}$   $\lambda_{\max}$  265.0 nm; Anal. (C<sub>16</sub>H<sub>22</sub>ClFN<sub>4</sub>O<sub>2</sub> Si) C, H, N.

Please replace the paragraph starting at page 85, line 15, with the following amended paragraph:

~~6-Chloro-2-fluoro-9-[5-O-(tert-butylidimethylsilyl)-2,3-dideoxy-2-fluoro~~  
~~-( $\alpha,\beta$ )-L-gycero-pent-2-enofuranosyl]purine~~  
6-Chloro-2-fluoro-9-[5-O-(tert-butylidimethylsilyl)-2,3-dideoxy-2-fluoro  
-( $\alpha,\beta$ )-L-gycero-pent-2-enofuranosyl]purine (327 and 328).

Please replace the paragraph starting at page 85, line 17, with the following amended paragraph:

A mixture of silylated 2-fluoro-6-chloropurine [prepared from 1.170 g (6.78 mmol) of 2-fluoro-6-chloropurine and dry DCE(40 mL) was stirred for 16 h at room temperature. After work-up similar to that of 326, purification by silica gel column chromatography (12 % EtOAc/hexanes) gave  ~~$\alpha$ -anomer-~~  $\beta$  anomer 327 (685 mg, 1.70 mmol, 30.0 %) as a white foam and  ~~$\alpha$ -anomer-~~  $\alpha$  anomer 328 (502 mg, 1.25 mmol, 22.1 %) as an yellowish syrup.

Please replace the paragraph starting at page 85, line 22, with the following amended paragraph:

**327:** UV (MeOH)  $\epsilon_{\max}$   $\lambda_{\max}$  268.5 nm. Anal. (C<sub>16</sub>H<sub>21</sub>F<sub>2</sub> Cl N<sub>4</sub>O<sub>2</sub>Si) C, H, N., **328:** UV (MeOH)  $\epsilon_{\max}$   $\lambda_{\max}$  269.0 nm. Anal. (C<sub>16</sub>H<sub>21</sub>F<sub>2</sub> Cl N<sub>4</sub>O<sub>2</sub>Si) C, H, N.

Please replace the paragraph starting at page 86, line 1, with the following amended paragraph:

~~6-Chloro-9-(2,3-dideoxy-2-fluoro-( $\alpha,\beta$ )-L-gycero-pent-2-enofuranosyl)purine~~

6-Chloro-9-(2,3-dideoxy-2-fluoro-( $\alpha,\beta$ )-L-gycero-pent-2-enofuranosyl)purine (329 and 330). A solution of 326 (1.2 g, 3.12 mmol) in dry CH<sub>3</sub>CN (20 mL) was treated with TBAF (1 M solution in THF) (3.2 mL, 3.2 mmol) and stirred for 1 h. After evaporation of solvent, the dryness was purified by column chromatography (3 % MeOH/CHCl<sub>3</sub>) to obtain  ~~$\alpha$ -anomer~~  $\beta$  anomer 329 (296 mg, 35 %) as a white solid and  ~~$\beta$ -anomer~~  $\alpha$  anomer 330 (380 mg, 45 %) as a foam.

Please replace the paragraph starting at page 86, line 6, with the following amended paragraph:

329: UV (MeOH)  $\epsilon_{\max}$   $\lambda_{\max}$  265.0 nm.; 330: UV (MeOH)  $\epsilon_{\max}$   $\lambda_{\max}$  265.0 nm.

Please replace the paragraph starting at page 86, line 8, with the following amended paragraph:

~~6-Amino-2-fluoro-9-[5-O-(tert-butyldimethylsilyl)-2,3-dideoxy-2-fluoro- $\alpha$ -L-gycero-pent-2-enofuranosyl]purine~~

6-Amino-2-fluoro-9-[5-O-(tert-butyldimethylsilyl)-2,3-dideoxy-2-fluoro- $\beta$ -L-gycero-pent-2-enofuranosyl]purine (331) and

Please replace the paragraph starting at page 86, line 10, with the following amended paragraph:

~~6-Chloro-2-amino-9-[5-O-(tert-butyldimethylsilyl)-2,3-dideoxy-2-fluoro- $\alpha$ -L-glycero-pent-2-enofuranosyl]purine~~

6-Chloro-2-amino-9-[-5-O-(tert-butyldimethylsilyl)-2,3-dideoxy-2-fluoro- $\beta$ -L-glycero-pent-2-enofuranosyl]purine (332)

Please replace the paragraph starting at page 86, line 12, with the following amended paragraph:

Dry ammonia was bubbled into a stirred solution of **327** (420 mg, 1.04 mmol) in dry DME (35 mL) at room temperature overnight. The salts were removed by filtration and the filtrate was evaporated under reduced pressure. The residue was purified by silica gel column chromatography (25 % EtOAc/hexanes) to give two compounds, **331** (114 mg, 0.30 mmol) as a white solid and **332** (164 mg, 0.41 mmol) as a white solid.

Please replace the paragraph starting at page 86, line 17, with the following amended paragraph:

**331**:UV (MeOH)  $\epsilon_{\text{max}}$   $\lambda_{\text{max}}$  268.5 nm. Anal. (C<sub>16</sub>H<sub>23</sub>F<sub>2</sub>N<sub>5</sub>O<sub>2</sub> Si0.2Acetone) C, H, N, **332**:UV (MeOH)  $\epsilon_{\text{max}}$   $\lambda_{\text{max}}$  307.5 nm. Anal. (C<sub>16</sub>H<sub>23</sub>FN<sub>5</sub>O<sub>2</sub> ClSi) C, H, N, Cl.

Please replace the paragraph starting at page 86, line 20, with the following amended paragraph:

~~6-Amino-2-fluoro-9-[5-O-(tert-butyldimethylsilyl)-2,3-dideoxy-2-fluoro- $\alpha$ -L-gycero-pent-2-enofuranosyl]purine~~

6-Amino-2-fluoro-9-[5-O-(tert-butyldimethylsilyl)-2,3-dideoxy-2-fluoro- $\alpha$ -L-gycero-pent-2-enofuranosyl]purine (333) and

Please replace the paragraph starting at page 87, line 1, with the following amended paragraph:

~~6-Chloro-2-amino-9-[5-O-(tert-butyldimethylsilyl)-2,3-dideoxy-2-fluoro- $\alpha$ -L-gycero-pent-2-enofuranosyl]purine~~

6-Chloro-2-amino-9-[5-O-(tert-butyldimethylsilyl)-2,3-dideoxy-2-fluoro- $\alpha$ -L-gycero-pent-2-enofuranosyl]purine (334) .

Please replace the paragraph starting at page 87, line 9, with the following amended paragraph:

**333:** UV (MeOH)  $\epsilon_{\max}$   $\lambda_{\max}$  269.0 nm. Anal. (C<sub>16</sub>H<sub>23</sub>F<sub>2</sub>N<sub>5</sub>O<sub>2</sub> Si·0.3Acetone) C, H, N, **334:** UV (MeOH)  $\epsilon_{\max}$   $\lambda_{\max}$  309.5 nm. Anal. (C<sub>16</sub>H<sub>23</sub>F ClN<sub>5</sub>O<sub>2</sub> Si) C, H, N.

Please replace the paragraph starting at page 87, line 11, with the following amended paragraph:

**~~9-(2,3-dideoxy-2-fluoro- $\beta$ -L-gycero-pent-2-enofuranosyl)adenine~~**

**9-(2,3-dideoxy-2-fluoro- $\beta$ -L-gycero-pent-2-enofuranosyl)adenine (335).** A solution of 329 (100 mg, 0.369 mmol) and saturated NH<sub>3</sub>/MeOH (50 mL) was heated at 90  $\square$ C— $\square$ C in a steel bomb for 24 h. After cooling to room temperature, the solvent was removed under reduced pressure and the residual syrup was purified by column chromatography using 6 % MeOH/CHCl<sub>3</sub> as an eluent to give 335 (70 mg, 75 %) as a white solid. 335: UV (H<sub>2</sub>O)  $\square_{\text{max}}$   $\lambda_{\text{max}}$  258 nm ~~( $\square$ 18,800)~~ ( $\epsilon$  18,800) (pH 2), 258.5 nm ~~( $\square$ 18,800)~~ ( $\epsilon$  18,800) (pH 7), 258.5 nm ~~( $\square$ 19,100)~~ ( $\epsilon$  19,100) (pH 11). Anal. (C<sub>10</sub>H<sub>10</sub>FN<sub>5</sub>O<sub>2</sub> .0.2H<sub>2</sub>O) C, H, N.

Please replace the paragraph starting at page 87, line 18, with the following amended paragraph:

**~~9-(2,3-dideoxy-2-fluoro- $\beta$ -L-gycero-pent-2-enofuranosyl)adenine~~**

**9-(2,3-dideoxy-2-fluoro- $\alpha$ -L-gycero-pent-2-enofuranosyl)adenine (336).** A solution of 330 (99 mg, 0.366 mmol) and saturated NH<sub>3</sub>/MeOH (50 mL) was heated at 90  $\square$ C— $\square$ C in a steel bomb for 24 h. After cooling to room temperature, the solvent was removed under reduced pressure and the residual syrup was purified by column chromatography using 6 % MeOH/CHCl<sub>3</sub> as an eluent to give 336 (72 mg, 78 %) as a white solid.

Please replace the paragraph starting at page 88, line 1, with the following amended paragraph:

**336:** UV (H<sub>2</sub>O)  $\square_{\text{max}}$   $\lambda_{\text{max}}$  258 nm ~~( $\square$ 21,100)~~ ( $\epsilon$  21,100) (pH 2), 259 nm ~~( $\square$ 21,500)~~ ( $\epsilon$  21,500) (pH 7), 259 nm ~~( $\square$ 22,600)~~ ( $\epsilon$  22,600) (pH 11). Anal. (C<sub>10</sub>H<sub>10</sub>FN<sub>5</sub>O<sub>2</sub> .0.3MeOH) C, H, N.



Please replace the paragraph starting at page 88, line 3, with the following amended paragraph:

**~~9-(2,3-dideoxy-2-fluoro- $\beta$ -L-gycero-pent-2-enofuranosyl)hypoxanthine~~**

**9-(2,3-dideoxy-2-fluoro- $\beta$ -L-gycero-pent-2-enofuranosyl)hypoxanthine (337)**. A mixture of **329** (100 mg, 0.369 mmol), NaOMe (0.5 M solution in MeOH) (2.94 mL, 1.46 mmol) and HSCH<sub>2</sub>CH<sub>2</sub>OH (0.1 mL, 1.46 mmol) in MeOH (20 mL) was refluxed for 4h under nitrogen. The reaction mixture was cooled, neutralized with glacial AcOH and evaporated to dryness under vacuum. The residue was purified by silica gel column chromatography (10 % MeOH/CHCl<sub>3</sub>) to afford **337** (74 mg, 80 %) as a white solid. **37**: UV (H<sub>2</sub>O)  $\epsilon_{\text{max}}$   $\lambda_{\text{max}}$  247 nm ~~( $\epsilon$ 12,400)~~ ( $\epsilon$ 12,400) (pH 2), 247.5 nm ~~( $\epsilon$ 13,000)~~ ( $\epsilon$ 13,000) (pH 7), 253 nm ~~( $\epsilon$ 13,100)~~ ( $\epsilon$ 13,100) (pH 11). Anal. (C<sub>10</sub>H<sub>9</sub>FN<sub>4</sub>O<sub>3</sub> .0.2H<sub>2</sub>O) C, H, N.

Please replace the paragraph starting at page 88, line 10, with the following amended paragraph:

**~~9-(2,3-dideoxy-2-fluoro- $\alpha$ -L-gycero-pent-2-enofuranosyl)hypoxanthine~~**

**9-(2,3-dideoxy-2-fluoro- $\alpha$ -L-gycero-pent-2-enofuranosyl)hypoxanthine (338)**. A mixture of **330** (100 mg, 0.369), NaOMe (0.5 M solution in MeOH) (2.94 mL, 1.46 mmol) and HSCH<sub>2</sub>CH<sub>2</sub>OH (0.1 mL, 1.46 mmol) in MeOH (20 mL) was refluxed for 4h under nitrogen. The reaction mixture was cooled, neutralized with glacial AcOH and evaporated to dryness under vacuum. The residue was purified by silica gel column chromatography (10 % MeOH/CHCl<sub>3</sub>) to afford **338** (70 mg, 80 %) as a white solid. **338**: UV (H<sub>2</sub>O)  $\epsilon_{\text{max}}$   $\lambda_{\text{max}}$  247.5 nm ~~( $\epsilon$ 12,700)~~ ( $\epsilon$  12,700) (pH 2), 247.5 nm ~~( $\epsilon$ 13,700)~~ ( $\epsilon$  13,700) (pH 7), 252.5 nm ~~( $\epsilon$ 13,100)~~ ( $\epsilon$  13,100) (pH 11). Anal. (C<sub>10</sub>H<sub>9</sub>FN<sub>4</sub>O<sub>3</sub> .0.3H<sub>2</sub>O) C, H, N.

Please replace the paragraph starting at page 88, line 18, with the following amended paragraph:

~~2-Fluoro-6-amino-9-(2,3-dideoxy-2-fluoro- $\alpha$ -L-gycero-pent-2-enofuranosyl)purine~~

2-Fluoro-6-amino-9-(2,3-dideoxy-2-fluoro- $\beta$ -L-gycero-pent-2-enofuranosyl)purine (339).

A solution of **31** (101 mg, 0.26 mmol) in dry acetonitrile (15 mL) was treated with TBAF (1 M solution in THF) (0.35 mL, 0.35 mmol) and stirred for 30 min. After evaporation of solvent, the dryness was purified by column chromatography (9 % CH<sub>2</sub>Cl<sub>2</sub>/MeOH) to obtain **339** (64.7 mg, 0.24 mmol, 92.3 %) as a white crystalline solid. UV (H<sub>2</sub>O)  $\epsilon_{\text{max}}$   $\lambda_{\text{max}}$  269.0 nm (pH 7).

Please replace the paragraph starting at page 89, line 1, with the following amended paragraph:

~~2-Fluoro-6-amino-9-(2,3-dideoxy-2-fluoro- $\alpha$ -L-gycero-pent-2-enofuranosyl)purine~~

2-Fluoro-6-amino-9-(2,3-dideoxy-2-fluoro- $\alpha$ -L-gycero-pent-2-enofuranosyl)purine (340).

A solution of **333** (73.4 mg, 0.19 mmol) in dry acetonitrile (10 mL) was treated with TBAF (1 M solution in THF) (0.25 mL, 0.25 mmol) and stirred for 30 min. After evaporation of solvent, the dryness was purified by column chromatography (9 % CH<sub>2</sub>Cl<sub>2</sub>/MeOH) to obtain **340** (46.2 mg, 0.17 mmol, 90.3 %) as a white crystalline solid. UV (H<sub>2</sub>O)  $\epsilon_{\text{max}}$   $\lambda_{\text{max}}$  269.0 nm (pH 7).

Please replace the paragraph starting at page 89, line 6, with the following amended paragraph:

~~2-Amino-6-chloro-9-(2,3-dideoxy-2-fluoro- $\alpha$ -L-gycero-pent-2-enofuranosyl)purine~~

2-Amino-6-chloro-9-(2,3-dideoxy-2-fluoro- $\beta$ -L-gycero-pent-2-enofuranosyl)purine (341).

A solution of **332** (143.5 mg, 0.40 mmol) in dry acetonitrile (15 mL) was treated with TBAF (1 M

solution in THF) (0.6 mL, 0.60 mmol) and stirred for 30 min. After evaporation of solvent, the dryness was purified by column chromatography (5 % CH<sub>2</sub>Cl<sub>2</sub>/MeOH) to obtain **341** (109 mg, 0.382 mmol, 95.5 %) as a white crystalline solid. UV (H<sub>2</sub>O)  $\epsilon_{\max}$   $\lambda_{\max}$  308.5 nm (pH 7).

Please replace the paragraph starting at page 89, line 11, with the following amended paragraph:

~~2-Amino-6-chloro-9-(2,3-dideoxy-2-fluoro- $\alpha$ -L-gycero-pent-2-enofuranosyl)purine~~

2-Amino-6-chloro-9-(2,3-dideoxy-2-fluoro- $\alpha$ -L-gycero-pent-2-enofuranosyl)purine (342).

A solution of **334** (145 mg, 0.36 mmol) in dry acetonitrile (10 mL) was treated with TBAF (1 M solution in THF) (0.5 mL, 0.50 mmol) and stirred for 30 min. After evaporation of solvent, the dryness was purified by column chromatography (9 % CH<sub>2</sub>Cl<sub>2</sub>/MeOH) to obtain **342** (99.9 mg, 0.35 mmol, 96.4 %) as a white crystalline solid. UV (H<sub>2</sub>O)  $\epsilon_{\max}$   $\lambda_{\max}$  309.0 nm (pH 7).

Please replace the paragraph starting at page 89, line 16, with the following amended paragraph:

~~9-(2,3-dideoxy-2-fluoro- $\beta$ -L-gycero-pent-2-enofuranosyl)guanine~~

9-(2,3-dideoxy-2-fluoro- $\beta$ -L-gycero-pent-2-enofuranosyl)guanine (343). A mixture of **341** (63.6 mg, 0.223 mmol), 2-mercaptoethanol (0.06 mL, 0.89 mmol) and 1 N NaOMe ( 0.89 mL, 0.89 mmol) in MeOH (10 mL) was refluxed for 5 h under nitrogen. The mixture was cooled, neutralized with glacial AcOH and concentrated to dryness under reduced pressure. The residue was purified by column chromatography (12 % CH<sub>2</sub>Cl<sub>2</sub>/MeOH) to obtain **343** (30.1 mg, 0.113 mmol, 50.7 %) as a white solid. UV (H<sub>2</sub>O)  $\epsilon_{\max}$   $\lambda_{\max}$  253.5 nm (pH 7).

Please replace the paragraph starting at page 89, line 22, with the following amended paragraph:

**~~9-(2,3-dideoxy-2-fluoro- $\beta$ -L-gycero-pent-2-enofuranosyl)guanine~~**

**9-(2,3-dideoxy-2-fluoro- $\alpha$ -L-gycero-pent-2-enofuranosyl)guanine (344)**. A mixture of **342** (59.3 mg, 0.208 mmol), 2-mercaptoethanol (0.07 mL, 1.04 mmol) and 1 N NaOMe ( 1.04 mL, 1.04 mmol) in MeOH (10 mL) was refluxed for 5 h under nitrogen. The mixture was cooled, neutralized with glacial AcOH and concentrated to dryness under vacuum. The residue was purified by column chromatography (12.5 % CH<sub>2</sub>Cl<sub>2</sub>/MeOH) to obtain **344** (28.0 mg, 0.105 mmol, 50.5 %) as a white solid. UV (H<sub>2</sub>O)  $\epsilon_{\text{max}}$   $\lambda_{\text{max}}$  253.0 nm (pH 7).